Observations of Occultations of Stars by the Moon, made at the Royal Observatory, Greenwich, in the Year 1913.

(*Communicated by the Astronomer Royal.*)

Day. 1913.		Phenomenon.	Mag.	Telescope.	G.M.T. h m s	Observer.
Jan. 12	Disapp.	B.D. −6°·6220	7·0	Sheepshanks	6 1 33·74	H.A.
18	,,	χ Tauri	5·7	Great Equatorial	9 3 40·38	H.F.
18	,,	χ Tauri (comes)	8·8	,,	9 4 1·22	H.F.
Mar. 23	Reapp.	Spica	1·2	Astrographic	9 22 15·98	W.
23	,,	,,	,,	Detached Tel.	,, 16·23	H.A.
May 10	Disapp.	B.A.C. 2383	6·5	Sheepshanks	10 15 6·21	H.A.
13	,,	34 Leonis	6·4	Detached Tel.	11 19 29·14	G.B.
13	,,	B.D. +14°·2203	8·9	Astrographic	9 1 21·68	W.S.
16	,,	Mayer 534	6·9	,,	8 15 28·50	W.A.L.
June 17	,.	B.A.C. 5737	6·7	,,	10 15 22·81	D.
July 20	,,	39 Aquarii	6·2	,,	12 48 52·81*	W.A.L.
Dec. 31	,,	ι Aquarii	4·4	,,	5 44 13·67	H.A.
31	,,	,,	,,	Detached Tel.	14·71	W.D.
31	,,	,,	,,	Sheepshanks	14·00	G.B.

The apertures of the telescopes used are as follows:—

Guiding Telescope of Astrographic Equatorial	10	inches.	Clock—Dent 2014.
Sheepshanks Equatorial	6⅝	,,	,, Earnshaw.
Great Equatorial			,, Dent 2009.
Detached telescope in Great Equatorial Dome	4	,,	,, Dent 2009.
Detached telescope	4	,,	,, Loseby 111.

The initials D., H.F., W., W.S., H.A., W.D., G.B., W.A.L. are those of Mr. Dyson, Mr. Furner, Mr. Witchell, Mr. Stevens, Mr. Acton, Mr. Davies, Mr. Bartle and Mr. Lambert.

* Probably the star was lost to view before it reached the Moon's Limb.

On the Total Light of the Stars. By S. Chapman, B.A., D.Sc.

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In a Memoir * by Mr. P. J. Melotte and myself, which was recently read before the Society, the results obtained from an extensive series of counts of stars, classified according to their Harvard photographic magnitudes, were collected and discussed; the number of stars of each photographic magnitude down to $17^{m}\cdot0$, in different galactic latitudes, was determined, and amongst the most important deductions may be mentioned the approximate constancy of the condensation of stars towards the galaxy, for stars of different magnitudes, and the great falling off in the rate of increase of $\log N_m$ per magnitude, for the faint stars. Here N_m denotes the total number of stars brighter than magnitude m, in the whole sky. The results indicated that N_m does not increase indefinitely with m, *i.e.* that the total number of the stars is finite; and it was found, moreover, that the observed values of N_m could be well represented by a formula from which an estimate of the total number of stars could readily be made.

The formula for N_m was

$$(1) \qquad N_m = A\frac{1}{\sqrt{\pi}}\int_{-\infty}^{B(m-C)} e^{-x^2}dx,$$

and with regard to the constants A, B, C, it may be noted that A represents the total number of stars, and C the magnitude to which it is necessary to go in order to obtain half the total number of stars. A, B, C are connected with certain other constants a, b, c, occurring in the formula

$$(2) \qquad \log\frac{dN_m}{dm} = a + bm - cm^2,$$

by the relations

$$(3) \qquad \begin{cases} A = \sqrt{\dfrac{\pi\log_{10}e}{c}}\cdot 10^{a+\frac{b^2}{4c}} \\ B = \sqrt{\dfrac{c}{\log_{10}e}} \\ C = \dfrac{b}{2c}, \end{cases}$$

and a, b, c are easily determined from the observed data according to the equation (2).

Four different sets (I. to IV.) of values of a, b, c were deduced

* "The Numbers of Stars of each Photographic Magnitude down to $17^{m}\cdot0$, in Different Galactic Latitudes," by S. Chapman and P. J. Melotte, *Memoirs of the R.A.S.*, vol. lx. part iv.